Discovering Design Drivers for Mobile Media Solutions

Akseli Anttila
Manager, User Experience
Nokia Corporation
P.O. Box 407
00045 NOKIA GROUP, Finland
akseli.anttila@nokia.com

Younghee Jung
Design Specialist
Nokia Corporation
Arco Tower
Shimomeguro 1-8-1 Meguro-ku
TOKYO 153-0064, Japan
younghee.jung@nokia.com

CHI 2006, April 22–27, 2006, Montréal, Québec, Canada.
ACM 1-59593-298-4/06/0004.

Abstract
We conducted user studies in 2000 and 2004 into digital media use, and discovered a number of constant findings even though the studies were separate both in geographically and chronologically. These constant findings, which we call design drivers, represent high level user benefits and constraints which are not likely to change quickly. We feel that knowledge of these constant drivers is beneficial in designing key features of mobile media devices. On the other hand, findings specific to a particular environment, variable design drivers, help to identify potential enablers and obstacles of product adoption.

Keywords
User research, user centered design, mobile media, digital media consumption, mobile context

ACM Classification Keywords
H.1.2 [Models and Principles]: User/Machine Systems

H.5.2 [Information Interfaces and Presentation]: User Interfaces – *human factors*

Introduction
For the purpose of this research, *digital media use* encompassed all forms of digital content and channels: images, video, audio, music, internet use and online

content, home electronics devices and mobile terminals.

The findings from the research were crystallized into *design drivers,* which are a description of the top level user needs or constraints that have to be taken into account when designing a product. However, a design driver does not describe the product-specific implementation details.

First user study – Media active youth, 2000
In November 2000 we explored the area of digital media consumption, with the intention of creating new product concepts. We aimed to understand the breadth of digital devices and content used by the youth at the time. By understanding the existing patterns and the underlying motivations of use we hypothesized that the new product concepts could be better aligned with an existing lifestyle, and therefore easier to adopt.

The project resulted in the formulation of design drivers for mobile media products and the design of new application and product concepts.

Second user study – Media users in Asia and UK, 2004
By 2004 we had observed a number of changes in the digital media environment, and decided to conduct a new study to review our earlier findings and understand if new patterns of usage have emerged.

The biggest changes had occurred in the use of Internet as a media channel. By 2004 broadband adoption had made peer-to-peer content sharing through Internet easier. Music sharing with self-burned CDs had been partly replaced by the exchange of mp3 files or links through email and instant messaging. Online creativity and sharing had become mainstream practices through the use of web logs and personal websites.

On the media creation side, new forms of visual creativity had emerged with the adoption of camera phones and digital cameras.

The study was conducted in South Korea, Japan and United Kingdom in March 2004. The findings were used to design new concepts and also define key ingredients for good user experience in new media product categories.

Methods

In both studies the participants were recruited from eloquent users of digital media. This was measured with ownership and use of a number of devices, such as a mobile phone, personal computer, digital camera. In addition to device ownership, familiarity with online services such as media download sites, online communities or personal websites was required.

Background studies
Before the user studies were conducted, we commissioned local subcontractors to conduct background studies, to provide us an understanding of the media ecosystem of the target region. This information helped us define the detailed interview structure.

Focus groups and dyad interviews
The main method to gain insights on the behavior of the users was interviews either in larger focus groups or friendship dyads. The interviews covered:

- motivations of media use
- content and frequency of use of digital media and services (including phone-based, mobile, Internet or home digital media)
- life cycles of commonly used digital media, discovery of media and services and trusted information sources, strategies for managing collections
- social media use e.g. sharing of media
- what actions are practiced in addition to consuming digital media (saving, modification and re-purposing)
- barriers and new opportunities

Observation
In addition to the interviews, we engaged in non-participatory observation and photographic documentation of media use and infrastructure in public spaces (Figure 1). This allowed us to better understand the constraints of the possible locations of use, and also to gather rich inspirational material for team members and stakeholders who were not taking part in the user research.

Figure 1. Observing mobile media use – Personal background music (Tokyo Japan), public TV screen, newspaper, mobile phone, portable music and almanac (Seoul, Korea)

Media use diary
The participants were asked to create diaries and photographic documentation for at least a week of their media use. In the first study the participants also created photographic collages depicting their understanding of digital media. The use of self-photography was particularly useful in allowing us to understand the context of use, as we did not have the resources to conduct individual contextual interviews with the participants.

Differences and similarities between the studies
Main differences between the studies were the geographical region and the age bracket of participants, and the size of the interview groups (Table 1).

	Region	Participant age	Interviews
Study 1 (2000)	US (California)	16-23 years	7 in-depth interviews (5 dyads, 2 one-on-one; 12 participants in total) 4 focus groups (23 participants in total)
Study 2 (2004)	Japan, Korea, UK	20-49 years	11 focus groups (67 participants in total)

Table 1. Details of the two studies

Comparison of study findings

After conducting the second study, we compared the findings to the first study to see what the impact of the changes had been on digital media use. In spite of differences in methods, geographical location, timing and participant demographics, a number of findings emerged consistently in both studies.

However, some findings were particular to only one of the studies.

Constant findings
A number of themes consistently emerged in all the studies, especially the high-level motivations for media use. We called these *constant design drivers.*

- Escaping boredom was one of the main reasons for media use
- Media was used to have a short micro-break between activities
- Media was used for mood management for longer breaks or anticipated situations
- Participants wanted to be aware of what is going on in the immediate surroundings
- Mobile media device users were subject to unanticipated interruptions from the environment (e.g. phone ringing while listening to music)
- Participants had specific uses for specific media channels (e.g. internet for content acquisition and distribution, messaging for selected sharing)
- Participants wanted to keep up to date their peer group and the society
- Participants had different roles in their peer groups as facilitators, distributors or consumers of shared media
- Communication had a role as an enabler and by-product of media sharing
- Familiarity with relevant cultural icons and ownership of media or devices was used as social capital
- Participants only wanted to pay for media they want (e.g. buying only one song from an album)
- Mobile phone was the most likely device to be carried with the participant at all times

Variable findings
In addition to the constant findings, we also found a number of themes specific to a particular region, which were different from the others. We called these *variable design drivers.*

- Cultural norms: e.g. the South Korean participants were more likely to consume current music hits, as they were required to sing them at Karaoke. The UK participants were more likely to choose music *they* like at parties, rather than consciously take the taste of others into consideration.
- Opportunities for media use: e.g. individuals commuting with cars have a different environment for media consumption than commuting with trains or buses.
- Technology legacy: Device replacement is influenced by existing solutions. E.g. a small mp3 player offers many advantages over Compact Disc or cassette players, but not over a portable Mini Disc player (MDP). In Japan MDPs have been popular and participants had not adopted the smaller mp3 players with the same speed as UK participants.
- Market environment: The availability and especially the cost of particular solutions varied widely in the studies, influencing their adoption.

Utilizing design drivers

The design drivers are useful to describe the desired high level functionality of a new product or service. The constant design drivers should be taken into account when defining the key features, as they describe what users want to achieve in a particular product domain. However, the variables, especially those resulting from cultural and market diversity, can help the designer to

identify potential enablers and obstacles of product adoption.

Design example – Communication and media use
One of the constant findings was the role of communication as an enabler of media sharing. We designed a number of applications for mobile phones which allowed the user to recommend or send media items to another user and engage in a shared, simultaneous media event (Figure 2).

Figure 2. Starting shared synchronous video viewing.

Design example – Managing interruptions
Another key finding for mobile media was the need to manage interruptions from the environment. As we were designing applications for mobile communication devices, where the user can suddenly receive calls or messages from others, we designed a system which allows the user to show to others that he is engaged in media use (Figure 3).

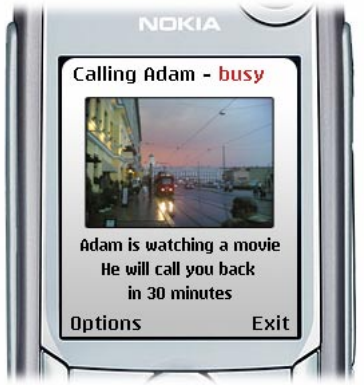

Figure 3. Showing a trusted friend that the user is currently watching a movie and does not wish to be disturbed.

Design example – User experience definition
In addition to designing application and product concepts, we also engaged in defining user experience targets for different media products. A user experience target is a concrete definition of a desired feature at a more detailed level than a design driver. These targets were then used as guidelines when other design teams were creating a particular application for the product.

For example, an experience target would define how easily a user can change channels in a mobile TV handset, or the process for sharing an image. The detailed implementation of the feature would then be the responsibility of the product design team.

Conclusions

We were interested to find new product creation opportunities in a domain area already populated by a number of competing products. Furthermore, users

already have established practices to fulfill certain basic needs.

Creating a profile of a new product or product experience in this environment necessitates understanding various influencers that constitute the mobile media experience.

After conducting the second study, we found the high level user needs had remained *constant* – unchanged during the four-year period between the two studies. The constant design drivers should be taken into account when defining *key* features for new products or services. However, the *variables*, especially those resulting from cultural and market diversity, helped us to identify potential enablers and obstacles of product adoption.

Acknowledgements

We would like to thank all the people who worked with us, especially our fellow researches and designers Jan Blom, Rob van der Haar, Anne Kirjavainen and Harri Wikberg.